CLAIMS

1. An imager comprising:

a) a photosensitive surface;

b) a light source which produces at least one scanning light beam;

c) a deflector, arranged to deflect the at least one scanning light beam onto the photosensitive surface;

d) a sensor which measures the orientation of the deflector;

e) a controller operative to determine a placement error of said at least one scanning beam on the photosensitive surface, responsive to the orientation measurement by the sensor; and

f) an actuator, responsive to the displacement error, and arranged to change the direction of deflection of the at least one light beam by the deflector,

wherein the sensor is configured to measure the orientation of the deflector substantially at a null in a vibrational mode of the deflector.

2. An imager according to claim 1 wherein the photosensitive surface is a moving surface.

3. An imager according to claim 2 wherein the controller determines said placement error relative to a desired position of said photosensitive surface.

4. An imager according to claim 2 or claim 3, wherein the moving photosensitive surface comprises the surface of a rotating cylinder.

5. An imager according to claim 2 or claim 3, wherein the moving photosensitive surface comprises the surface of a moving belt.

6. An imager according to any of claims 1-5, wherein the sensor is an optical sensor.

7. An imager according to claim 6, wherein the sensor comprises:

a) a second light source which produces a second light beam;

b) a second deflector, fixed to the deflector or a support of the deflector, which deflects the second light beam; and

c) an optical position sensor which measures a position of the deflected second light beam.

8. An imager according to claim 7, wherein the second light source comprises a laser, and the second light beam strikes a surface of the optical position sensor at an oblique angle, thereby avoiding reflection of the second light beam from the optical position sensor back into the laser.

9. An imager according to any of claims 1-8, wherein the vibrational mode is the lowest frequency vibrational mode of the deflector.

10. An imager according to any of claims 1-9, wherein the vibrational mode is a torsional mode.

11. An imager according to any of claims 1-10, wherein the null is substantially at the center of the deflector in the scan direction.

12. An imager according to any of claims 1-11 wherein the deflection of the at least one scanning light beam is controlled in a closed loop control system, utilizing said sensor measurement as feedback signal.

13. An imager according to any of claims 1-12, wherein the feedback would be positive at the frequency of the vibrational mode if the sensor were to measure the deflector at a maximum of the vibrational mode.

14. An imager according to any of claims 1-13, wherein the actuator is attached to at least one end of the deflector in the scan direction, and rotates the deflector around an axis substantially parallel to the scan direction, and where the sensor measures the orientation of the deflector.

15. An imager according to any of claims 1-14 wherein the deflector is a mirror.

16. An imager according to any of claims 1-14 wherein the deflector is a prism.

17. An imager according to any of claims 1-16 wherein the imager is a printer.

18. An imager according to any of claims 1-16 wherein the imager is a copier.

19. A method of producing an image on a photosensitive surface in an imager, wherein a cross-scan position of a scan line with respect to the photosensitive surface may vary from an expected position, the method comprising:

a) deflecting a scanning light beam, utilizing a deflector, such that the deflected scanning light beam falls on the photosensitive surface, thereby producing a plurality of lines of the image;

c) changing the orientation of the deflector, to correct an error in the cross-scan position of the lines on the photosensitive surface, caused by said variation;

d) measuring the orientation of the deflector; and

e) controlling the change in the orientation of the deflector in response to the measurement of orientation of the deflector,

wherein the measurement of the orientation of the deflector is made at a location on the deflector in the vicinity of a null of a vibrational mode of the deflector.

20. A method according to claim 19 wherein the photosensitive surface is a moving surface.

21. A method according to claim 20, also including:

a) measuring the position of the photosensitive surface; and

b) finding a difference between the measured position or orientation and an expected position or orientation;

wherein changing the orientation of the deflector comprises changing the orientation by an amount and in a direction which depends on said difference.

22. A method according to claim 20 or claim 21, wherein the moving photosensitive surface comprises the surface of a rotating cylinder.

23. A method according to claim 20 or claim 21, wherein the moving photosensitive surface comprises the surface of a moving belt.

24. A method according to any of claims 19-23, wherein the measurement is optical.

25. A method according to claim 24, wherein the measurement comprises:

a) reflecting a second light beam from a second deflector fixed to the deflector or to a support of the deflector; and

b) measuring a position of the reflected second light beam.

26. A method according to any of claims 19-25, wherein the vibrational mode is the lowest frequency vibrational mode.

27. A method according to any of claims 19-26, wherein the vibrational mode is a torsional mode.

28. A method according to any of claims 19-27, wherein the null is substantially at the center of the deflector in the scan direction.

29. A method according to any of claims 19-28 wherein the deflection of the at least one scanning light beam is controlled in a closed loop control system, utilizing said measurement of deflection as feedback signal.

30. A method according to claim 29, wherein the feedback would be positive at the frequency of the vibrational mode if the measurement were made at a location on the deflector at a maximum of the vibrational mode.

31. A method according to any of claims 19-30 wherein the deflector is a mirror.

32. A method according to any of claims 19-30 wherein the deflector is a prism.

33. A method according to any of the claims 19-32 wherein the imager is a printer.

34. A method according to any of claims 19-32 wherein the imager is a copier.